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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/851,678	05/08/2001	Douglas Charles Elliott	23-56420	3245

7590

06/29/2004

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EXAMINER
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PRICE, ELVIS O

ART UNIT	PAPER NUMBER
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1621

DATE MAILED: 06/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/851,678

**Applicant(s)**

ELLIOTT, DOUGLAS CHARLES

**Examiner**

Elvis O. Price

**Art Unit**

1621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-47 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12-18 and 27-31 is/are allowed.
- 6) ☒ Claim(s) 1-9, 11, 19-26, 32-42 and 44-47 is/are rejected.
- 7) ☒ Claim(s) 10 and 43 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

1. Claims 1-47 are pending in the application. Claims 46 and 47 were inadvertently omitted, by the Examiner, from the Office action dated 7/1/03.

2. Applicant's amendments/arguments, filed 2/11/04, were found convincing to overcome the 35 USC 103(a) rejection, issued in the Office action dated 7/1/03.

However, a new rejection has been issued for the claims below.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-9, 11, 19-26, 32-42, and 44-47 rejected under 35 U.S.C. 103(a) as being unpatentable over Rothrock {US Pat. 2,004,135}, in view of Rowe {US Pat. 4,067,748} and further in view of Baret et al. {US Pat. 4,409,247}.

Applicants claim, in brief, a method for producing at least one polyol from lactose comprising: (a) hydrolyzing lactose to produce a hydrolyzate that includes at least one monosaccharide; (b) subsequently hydrogenating the hydrolyzate to produce and alditol-containing intermediate composition; and (c) hydrogenolyzing the alditol-containing intermediate composition to produce at least one polyol.

Rothrock teaches a method for producing at least one polyol (ethylene glycol, propylene glycol or glycerol from a monosaccharide comprising, hydrogenating the monosaccharide to produce and alditol-containing intermediate composition followed by

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hydrogenolyzing the alditol containing intermediate composition to produce at least one polyol (see Col. 1, lines 27-47 and Examples 1-8). The difference between the presently claimed invention and what is taught by the Rothrock reference is that the Rothrock reference does not exemplify the presently claimed first step of hydrolyzing lactose to produce a hydrolyzate that includes at least one monosaccharide or Rothrock et al. do not teach using a solid acid catalyst or enzyme to carry out the hydrolysis of lactose. However, the Rothrock reference generally teaches that the monosaccharide used in his invention may be obtained from the hydrolysis of polysaccharides including lactose (Col. 3, lines 25-40).

Rowe teaches the hydrolysis of lactose to produce glucose and galactose by contacting the lactose with a strongly acidic ion exchange resin catalyst (see abstract, Col. 2, lines 7-12).

Baret et al. teach the hydrolysis of lactose to produce glucose and galactose by contacting the lactose with immobilized lactase (beta-galactosidase) (see abstract, summary of the invention and Example 1).

It would have been *prima facie* obvious to one having ordinary skill in the art, in view of the Rothrock, Rowe and Baret et al. references, to arrive at the presently claimed because Rothrock teaches a method for producing at least one polyol from a monosaccharide (which may obtained from the hydrolysis of a polysaccharide such as lactose) comprising, hydrogenating the monosaccharide to produce and alditol-containing intermediate composition followed by hydrogenolyzing the alditol containing intermediate composition to produce at least one polyol and Rowe teaches the

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hydrolysis of lactose using a solid acid catalyst while Baret et al. teach the hydrolysis of lactose using immobilized enzyme (beta-galactosidase).

One having ordinary skill in the art would have been motivated, in view of the teachings in the references above, to arrive at other alternatives routes for preparing polyols (depending on cost and availability of the materials) by using a polysaccharide, such as lactose, as the raw material in generating the monosaccharide which is subsequently processed to produce the desired product. One having ordinary skill in the art would have been motivated to use a solid acid catalyst, such as the one taught by Rowe, or an immobilized enzyme as taught by Baret et al. because the solid acid catalyst taught by Rowe allows for faster hydrolysis time (see Col. 1, lines 63-67) and the use of the immobilized enzyme in the Baret et al. process allows for the hydrolysis of the lactose without previous ultrafiltration treatment (demineralization). Therefore, the presently claimed invention would have been obvious to one having ordinary skill in the art.

### ***Response to Arguments***

Applicant's arguments with respect to the rejected claims have been considered but are moot in view of the new ground(s) of rejection.

### ***Allowable Subject Matter***

Claims 10 and 43 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art of record does not teach or

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suggest performing the presently claimed method steps (of claim 1) in the presence of the catalyst system(s) recited in claims 10 and 43.

The following is a statement of reasons for the indication of allowable subject matter: Claims 12-18, and 27-31 are unobvious over the prior art of record because the prior art of record does not teach or suggest using a ruthenium hydrogenation catalyst which is disposed on a titania support.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elvis O. Price whose telephone number is 571 272-0644. The examiner can normally be reached on 8:30 am to 5:00 pm; Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann R. Richter can be reached on 571 272-0646. The fax phone numbers for the organization where this application or proceeding is assigned is 703 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308-1235

A handwritten signature in black ink, appearing to read 'Elvis O. Price', written in a cursive style.

Elvis O. Price

June 28, 2004